

REMARKS**Claim Status**

Claims 22-24, 26-28, 32, and 38-52 are pending in the application. Claims 22-24, 32 and 39-43 stand rejected. Claims 26-28 and 38 were withdrawn by the Examiner as being drawn to a non-elected invention.

Claims 44-52, added by the Amendment of March 23, 2009, are not examined and are indicated as withdrawn. It is Applicants' understanding that this is a withdrawal subject to non-allowance of the linking claims (*i.e.* Claim 22).

Claim Amendments

Claim 32 is amended to more precisely define the claimed subject matter. Namely, the portion of Claim 32 providing the definition of variables DCy and CCy is now amended to recite:

DCy is the same or different at each instance and is a cyclic group which contains at least one nitrogen or phosphorus atom via which the cyclic group DCy is bonded to the metal and, further wherein the group DCy is optionally substituted with one or more substituents R¹¹;
CCy is the same or different at each instance and is a cyclic group which contains a carbon atom via which the cyclic group CCy is bonded to the metal and, further wherein the groups CCy is optionally substituted with one or more substituents R¹¹;
wherein the DCy and CCy groups are bonded to one another via a covalent bond;

Support for the recitation that the groups DCy “contains at least one nitrogen or phosphorus atom via which the cyclic group DCy is bonded to the metal” is found on page 20, lines 4-8 of the English translation of the application.

Election/Restriction

The Examiner stated that Claims 44-52 are withdrawn as drawn to non-elected subject matter.

Applicants elected, with traverse, Group 2 (Claims 22-25, 29-27 and 39-43) drawn to a mixture, wherein the variable L is P, As, Sb or Bi and according to Formula (2), see Reply

mailed on September 11, 2008. By the previous Amendment, Applicants amended all claims in the application to be directed to the elected subject matter according to Formula (2). Applicants also noted that Formulas (5)-(15) and (40)-(42) are subgeneric formulas of Formula (2). All of the Formulas (5)-(15) and (40)-(42) are encompassed within the structure described by the Formula (2) and contain same common set of variables L, wherein L is P, As, Sb or Bi, R¹, R², and R³ as defined in Claim 22. As such, as Applicants argued, Claims 44-52 are within the elected Group 2 and, therefore, should be examined.

As such, Applicants note that the Examiner's withdrawal of Claims 44-52 is understood as a *provisional* withdrawal of subcombination claims, based on the rejection, over the cited references, of a linking claim (Claim 22), which covers a species selected for the purposes of search and examination (Bis(9,9'-spirobifluoren-2-yl)phenylphosphine oxide (matrix material M1)). As described in M.P.E.P. §809:

When all claims directed to the elected invention are allowable, should any linking claim be allowable, the restriction requirement between the linked inventions must be withdrawn. Any claim(s) directed to the nonelected invention(s), previously withdrawn from consideration, which depends from or requires all the limitations of the allowable linking claim must be rejoined and will be fully examined for patentability. Where the requirement for restriction in an application is predicated upon the nonallowability of generic or other type of linking claims, applicant is entitled to retain in the application claims to the nonelected invention or inventions.

Accordingly, Applicants request the rejoinder of Claims 44-52 should the traversal of the reference-based rejections, below, be successful.

Claim Rejection Under 35 U.S.C. §112

Claim 32 stands rejected under 35, U.S.C. §112, second paragraph, as being indefinite. The Examiner stated that the variables DCy and CCy are confusingly defined and because the variables R⁴, R⁵, R⁶ and R¹¹ are not in formulas (49)-(52).

Applicants amended the portion of Claim 32 defining variables DCy and CCy. In particular, the donor atom on the group DCy is now defined as either nitrogen or phosphorus.

Regarding the variables R⁴, R⁵, R⁶ and R¹¹, Applicants respectfully direct the Examiner's attention that both groups DCy and CCy can be optionally substituted with a group R¹¹. It is

within the definition of the group R¹¹, provided immediately below the definitions of the groups DCy and CCy that the Examiner will find references to groups R⁴, R⁵ and R⁶.

Applicants believe that amendments to Claim 32 address the issues raised by the Examiner. Reconsideration and withdrawal of the rejection are respectfully requested.

Claim Rejection Under 35 U.S.C. §103(a)

Claims 22-24, 32 and 39-43 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Riwotzki, previously of record, or, in the alternative, over Iaconi *et al.*, "Thermoluminescence of a mixed rare earth phosphate powder La_{1-x-y}Ce_xTb_yPO₄", Optical Materials (2001), 17(3): 409 ("Iaconi").

The Examiner stated that Riwotzki teaches a mixture that includes emission material LaPO₄:Ce, Tb. The Examiner stated that Applicants claim a mixture in which an emission material includes a material which contains at least one element of atomic number greater than 56 and less than 80, or selected from molybdenum, tungsten, rhenium, ruthenium, osmium, rhodium, iridium, palladium, platinum, silver, gold or europium. The Examiner stated that "[t]he instantly claimed mixture would have been suggested to one of ordinary skill because one of ordinary skill wishing to obtain mixture capable of emission is taught to select elements from the teachings of Riwotzki" (Office Action, page 5, first paragraph).

Although the Examiner's rationale is unclear, it is Applicants' understanding that the Examiner appears to conclude that replacing the single compound taught by Riwotzki by an emission material B, defined in Applicants' Claim 22, would be obvious to one of ordinary skill in the art. If Applicants are incorrect, clarification is requested.

Applicants disagree.

Riwotzki teaches an improved synthetic method for production of LaPO₄:Ce,Tb nanocrystals which yields a "remarkably narrow particle size distribution" (Riwotzki, p. 573, last paragraph). Riwotzki clearly indicates that the subject of his studies is the method of synthesis of the "mixed phosphate La_{0.4}Ce_{0.45}Tb_{0.15}PO₄" because this *specific* compound a "highly efficient emitter of green light" and is "chemically very stable, even in the presence of mercury plasma discharge inside a lamp, and has an overall luminescence quantum yield of 93%." Riwotzki further states: "Redispersible particles of La_{0.4}Ce_{0.45}Tb_{0.15}PO₄ may therefore form a stable and

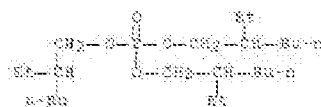
efficient substitute for organic laser dyes in various applications.” (Riwotzki, p. 573, second paragraph, emphasis added).

It follows from the above that (i) Riwotzki teachings are limited to a single compound and that (ii) Riwotzki suggests to use the disclosed compound as a substitute for organic emitters. Therefore, the teachings of Riwotzki direct one of ordinary skill *away* from (i) modifying the emitter of Riwotzki and from (ii) applying the teachings of Riwotzki to organic electronic devices.

Indeed, Riwotzki states that $\text{La}_{0.4}\text{Ce}_{0.45}\text{Tb}_{0.15}\text{PO}_4$ possesses a number of advantageous properties. These properties depend, in part, on the interplay of energy levels of the constituent atoms, shown in Figure 4 of Riwotzki. It stands to reason that, absent some structure-activity study or other evidence to the contrary, changing the composition of the emitter by replacing one or more metals with those recited in Applicants’ Claim 22 would have a deleterious effect on the advantageous properties of the emitter of Riwotzki. Therefore, the very rationale provided by Riwotzki for studying $\text{La}_{0.4}\text{Ce}_{0.45}\text{Tb}_{0.15}\text{PO}_4$ would lead one of ordinary skill *away* from modifying the compound of Riwotzki in *any* manner, to say nothing about modifying it in a manner necessary to arrive at the emitter as defined by Applicants’ Claim 22.

Similarly, because Riwotzki suggests using his emitter to replace organic dyes, one of ordinary skill would not be motivated to apply his teachings in the art of organic light electronic devices, which are encompassed by some of the embodiments claimed by Applicants (see, *e.g.* Claim 40).

Riwotzki does not render Claims 22-24, 32 and 39-43 obvious for yet another reason. Applicants’ Claim 22 is drawn to a mixture of a matrix material of formula (2) and at least one emission material. The Examiner stated that Riwotzki discloses such a mixture since Riwotzki teaches that the emitter $\text{La}_{0.4}\text{Ce}_{0.45}\text{Tb}_{0.15}\text{PO}_4$ is synthesized in the presence of tris(ethylhexylphosphate) of the following formula:



Applicants note, however, that as the Examiner correctly pointed out, Riwotzki teaches a *synthesis* of his emitter. Tris(ethylhexylphosphate) was eliminated from the final product, as

described in the experimental section of Riwozki (page 576, left column, last paragraph). As such, nowhere in Riwozki can there be found a suggestion or a motivation to employ such a *mixture* in the final product.

Thus, one of ordinary skill in the art would not be motivated by the teachings of Riwozki to modify his emitter in a manner necessary to arrive at the emission material as defined by Applicants' Claim 22, and to mix such an emitter with a matrix material of formula (2).

Reconsideration and withdrawal of the rejection are respectfully requested.

Regarding Iaconi

Applicants first note that Iaconi is a newly cited reference. The Examiner, however, did not include a PTO Form 892 with the Office Action of May 21, 2009. Applicants respectfully request that the Iaconi reference be made of record by providing Applicants with a PTO Form 892.

Secondly, Applicants note that the newly cited reference by Iaconi has not been expressly relied upon by the Examiner. However, Applicants note that the arguments presented above with respect to Riwozki apply, *mutatis mutandis* to Iaconi.

Iaconi, who studies a compound of formula $\text{La}_{1-x-y}\text{Ce}_x\text{Tb}_y\text{PO}_4$ due to its unusual thermoluminescent properties, does not motivate one of ordinary skill in the art to modify the disclosed compound since, absent any evidence to the contrary, such modification may result in the loss of the unusual properties. Moreover, Iaconi does not disclose any *mixtures* of the emitter $\text{La}_{1-x-y}\text{Ce}_x\text{Tb}_y\text{PO}_4$ and any compound that could be called a matrix material.

Accordingly, Iaconi fails to render Claims 22-24, 32 and 39-43 obvious. Reconsideration and withdrawal of the rejection are respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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